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10/724,281	11/28/2003	Shinichiro Hashimoto	82478-2800	1152

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EXAMINER	
ALEMU, EPHREM	
ART UNIT	PAPER NUMBER
2821	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,281	HASHIMOTO ET AL.	
	Examiner	Art Unit	
	Ephrem Alemu	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33,36-70 and 73-79* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *33,36-38,70 and 73-75* is/are allowed.

6)☒ Claim(s) *1-32 and 39-79* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 38 and 70 are objected to because of the following informalities: In claim 33, line 12, change "potential" with --the second voltage-- to eliminate antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-32, 39, 40-69 and 76-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al. (US Pub. 2003/0042855) in view of Yamamoto et al. (US 6,714,176).

Re claims 1, 8 and 9, Chien discloses a plasma display panel device (Fig. 3) comprising:

a panel unit having a pair of a first electrode (i.e., sustain electrode X) and a second electrode (i.e., scan electrode Yi), and a third electrode (i.e., address electrode Ai) that intersects the electrode pair to define a discharge cell (10) (Figs. 1, 3; Page 1, paragraphs [0005-[0007] & [0012]; wherein the electrode pair (i.e., sustain and scan electrodes X, Yi) is provided on a first substrate (1), and the third electrode (i.e., address electrode Ai) is provided on a second substrate (7) that is disposed facing the first substrate (1) across a discharge space), and

a drive unit (i.e., control unit 110) that drives the panel unit using a drive method having a write period (i.e., address period A1-A8) and a sustain period (SS1-SS8), by applying, in the sustain period, a first voltage of predetermined duration (i.e., second sustain pulse) to the electrode pair (i.e., sustain and scan electrodes X, Yi), and a second voltage of predetermined duration (i.e., first sustain pulse) to the third electrode (i.e., address electrode Ai) so as to generate a sustain discharge between the first and second electrodes (i.e., sustain and scan electrodes X, Yi) in the sustain period, wherein the drive unit changes a potential of the third electrode (i.e., address electrode Ai) during the sustain discharge (Figs. 3, 4, 7, page 1, paragraphs [0007], [0008], [0012]; Page 2, paragraphs [0029] – [0030]).

Although, Chien shows the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing, Chien does not show the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing within the duration of the first voltage applied to the first electrode.

In the same field of endeavor, Yamamoto teaches of changing a potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) for the purpose of increasing the luminous efficiency of the plasma display panel (Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16; Col. 16, lines 18-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drive unit (i.e., control unit 110) of Chien to change the potential of the second voltage applied to the third electrode (i.e., address electrode

Ai) within the duration of the first voltage applied to the first electrode as thought by Yamamoto for the purpose of increasing the luminous efficiency of the plasma display panel as taught by Yamamoto.

Re claims 2, 3, 4 and 5, both Chien and Yamamoto further show the change in the potential of the third electrode (i.e., address electrode) during the sustain discharge (i.e., light-emission period 51) is a decrease from a potential V1 (i.e. Vs or V6) to a potential V2 (i.e., 0 V); and wherein the drive unit increases the potential of the third electrode (i.e., address electrode) from a potential V0 (i.e., 0 V or ground) to the potential V1 (i.e., V6) in the sustain period (i.e., light-emission period 51) wherein the potentials V0 (i.e., 0 V) and V2 (i.e., 0 V) are equal and wherein the potentials V0 and V2 are set in a range that will a not cause a discharge to occur between the third electrode (i.e., address electrode) and the first or second electrode (i.e., sustain and scan electrodes X, Yi) (see Chien, Fig. 7, page 1, paragraph [0012]; Page 2, paragraphs [0029] – [0030];and see Yamamoto, Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16; Col. 16, lines 18-24).

Re claims 6 and 10, both Chien and Yamamoto further shows a waveform of the voltage applied to the third electrode (i.e., address electrode) in the sustain period is a pulse waveform (i.e., first or second pulse), and the change in the potential of the third electrode (i.e., address electrode Ai) during the sustain discharge corresponds to a fall in the pulse waveform (i.e., during second sustain pulse); and wherein a waveform (i.e., first or second pulse) of the voltage applied to the electrode pair (i.e., sustain and scan electrodes X, Yi) in the sustain period has a slope requiring a duration T to at least one of rise and fall (see Chen, Fig. 7, page 1, paragraph [0012]; Page 2, paragraphs [0029] – [0030]; and see Yamamoto, Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16).

Re claims 11 and 12, given Chien modified by Yamamoto driving circuit the waveform (i.e., first or second pulse) of the voltage applied to the electrode pair (i.e., sustain and scan electrodes X, Yi) in the sustain period having the slope requiring a duration T to at least one of rise and fall; wherein T being in a range having a width of + or - 20% with respect to a reference value in a range of 250 nsec to 800 nsec would have been obvious because Yamamoto teaches changing the potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) (see Yamamoto Figs. 1, 3, 14).

Re claim 7, Chien discloses a plasma display panel device (Fig. 3) comprising;

a panel unit having a pair of a first electrode (i.e., sustain electrode X) and a second electrode (i.e., scan electrode Yi), and a third electrode (i.e., address electrode Ai) that intersects the electrode pair to define a discharge cell (10) (Figs. 1, 3; Page 1, paragraphs [0005-[0007] & [0012]; wherein the electrode pair (i.e., sustain and scan electrodes X, Yi) is provided on a first substrate (1), and the third electrode (i.e., address electrode Ai) is provided on a second substrate (7) that is disposed facing the first substrate (1) across a discharge space), and

a drive unit (i.e., control unit 110) that drives the panel unit using a drive method having a write period (i.e., address period A1-A8) and a sustain period (SS1-SS8), by applying, in the sustain period, a first voltage of predetermined duration (i.e., second sustain pulse) to the electrode pair (i.e., sustain and scan electrodes X, Yi), and a second voltage of predetermined duration (i.e., first sustain pulse) to the third electrode (i.e., address electrode Ai) so as to generate a sustain discharge between the first and second

electrodes (i.e., sustain and scan electrodes X, Yi) in the sustain period, wherein the drive unit changes a potential of the third electrode (i.e., address electrode Ai) during the sustain discharge (Figs. 3, 4, 7, page 1, paragraphs [0007], [0008], [0012]; Page 2, paragraphs [0029] – [0030]).

Although, Chien shows the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing (Fig. 7), Chien does not show the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing in a period equal to 80% of a time constant of the sustain discharge.

In the same field of endeavor, Yamamoto teaches of changing a potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) for the purpose of increasing the luminous efficiency of the plasma display panel (Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16; Col. 16, lines 18-24). Further Yamamoto shows in Fig. 3, the potential of the second voltage applied to the third electrode (i.e., address electrode) changing in a period equal to 80% of a time constant of the sustain discharge.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drive unit (i.e., control unit 110) of Chien to change the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) within the duration of the first voltage applied to the first electrode as thought by Yamamoto for the purpose of increasing the luminous efficiency of the plasma display panel as taught by Yamamoto.

Re claims 13, 14, 15 and 16, given Chien modified by Yamamoto driving circuit the voltage waveform applied to the electrode pair in the sustain period is a pulse waveform (i.e., first or second pulse) that alternates repeatedly between high and low potentials, the high periods being of equal duration to the low periods, wherein the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle and the change in the potential of the third electrode occurs at the same time with voltage waveform applied to the electrode pair in the sustain period is a pulse waveform (i.e., first or second pulse) satisfies the pulse waveform being in a range of T-0.15 or –0.05 μsec to T+0.25 or +0.15 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change would have been obvious since Yamamoto teaches changing the potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) (see Yamamoto Figs. 1, 3, 14).

Re claims 17-20, 21, 22, 23 and 24, given Chien modified by Yamamoto driving circuit the voltage waveform applying waveform of the first voltage to the first electrode and second electrode in the sustain period being a pulse waveform that alternates repeatedly between high and low potentials, the high periods being shorter than the low periods, and the change in the potential of the third electrode occurs within a range as claimed in claims 21 and 22 after the waveform of the first voltage applied to at least one of the first and second electrode begins to rise or fall would have been obvious because Yamamoto further shows the waveform of the first voltage applied to the first electrode and second electrode in the sustain period is a pulse waveform that alternates repeatedly

between high and low potentials, the high periods being shorter than the low periods, and the change in the potential of the third electrode occurs within a range as shown in Figs. 1, 3 and 14 after the waveform of the first voltage applied to at least one of the first and second electrode begins to rise or fall and the first voltage applied to the first electrode and second electrode is out of phase. Furthermore, the voltage waveform applied to the first electrode and second electrodes of waveform of the first voltage in the sustain period being a pulse waveform that alternates repeatedly between high and low potentials, the high periods being longer than the low periods, and the change in the potential of the third electrode occurs within a range as claimed in claims 17-19 and the first voltage applied to the first electrode being out of phase with the waveform of the first voltage applied to the second electrode as claimed in claim 20 would have been an obvious design choice since Yamamoto further shows the waveform of the first voltage applied to the first electrode and second electrode in the sustain period is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being shorter than the low periods, and the change in the potential of the third electrode occurs within a range as shown in Figs. 1, 3 and 14 after the waveform of the first voltage applied to at least one of the first and second electrode begins to rise or fall

Re claims 25, 28, 29 and 30, Chien discloses a plasma display panel device (Fig. 3), comprising:

a panel unit having a pair of a first electrode (i.e., sustain electrode X) and a second electrode (i.e., scan electrode Yi), and a third electrode (i.e., address electrode Ai) that intersects the electrode pair to define a discharge cell (10) (Figs. 1, 3; Page 1, paragraphs [0005-[0007] & [0012]); and

a drive unit (i.e., control unit 110) that drives the panel unit using a drive method having a write period (i.e., address period A1-A8) and a sustain period (SS1-SS8), by applying, in the sustain period, a first voltage of predetermined duration (i.e., second sustain pulse) to the electrode pair (i.e., sustain and scan electrodes X, Yi) and a second voltage of predetermined duration (i.e., first sustain pulse) to the third electrode (i.e., address electrode Ai), so as to generate a sustain discharge between the first and second electrodes (i.e., sustain and scan electrodes X, Yi) in the sustain period, wherein the drive unit changes a potential of the third electrode (i.e., address electrode Ai) during the sustain discharge from V0 (i.e., 0 V) to V1 (i.e., Vs) prior to the sustain discharge, and from V1 (i.e., Vs) to V2 (i.e., 0 V) after the sustain discharge, and the potentials V0 (i.e., 0 V), V1 (i.e., Vs) and V2 (i.e., 0 V) are set so that V1 > V0 and V1 > V2, or V0 > V1 and V2 > V1 (Figs. 3, 4, 7, page 1, paragraphs [0007], [0008], [0012]; Page 2, paragraphs [0029] – [0030]; wherein one of the electrodes in the pair is a scan electrode (Yi) and the other electrode in the pair is a sustain electrode (X), and the third electrode is a data electrode (i.e., address electrode Ai) and wherein a cycle of the voltage waveform applied to the third electrode in the sustain period is an integer multiple of a cycle of the voltage waveform applied to the electrode pair).

Although, Chien shows the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing, Chien does not show the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing within the duration of the first voltage applied to the first electrode.

In the same field of endeavor, Yamamoto teaches of changing a potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration

of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) for the purpose of increasing the luminous efficiency of the plasma display panel (Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16; Col. 16, lines 18-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drive unit (i.e., control unit 110) of Chien to change the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) within the duration of the first voltage applied to the first electrode as thought by Yamamoto for the purpose of increasing the luminous efficiency of the plasma display panel as taught by Yamamoto.

Re claims 26 and 27, Yamamoto further shows the drive unit increases or decreases the potential of the third electrode (i.e., address electrode) from V0 (i.e., 0 V) to V1 (i.e., V6) prior to a first sustain discharge, sustains the potential V1 (i.e., V6), and decreases or increases the potential of the third electrode from V1 to V2 (i.e., 0 V) after a second sustain discharge that is subsequent to the first sustain discharge (Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16).

Re claims 31 and 32, Yamamoto further shows a binding capacity of the first electrode (i.e., X electrode) with the third electrode (i.e., address electrode) is different from a binding capacity of the second electrode (i.e., Y electrode) with the third electrode (i.e., address electrode), and the drive unit increases the potential of the third electrode when a potential of the electrode in the pair with the greater binding capacity is high, wherein one of the electrodes in the pair is a scan electrode (Y electrode) and the other

electrode in the pair is a sustain electrode (X electrode), and the third electrode is a data electrode (i.e., address electrode) (Figs. 1, 2, 3, 14; Col. 10, line 23- Col. 11, line 16).

Re claims 39, 40, 41 and 42, Chien discloses a plasma display panel device (Fig. 3), comprising:

a panel unit having a pair of a first electrode (i.e., sustain electrode X) and a second electrode (i.e., scan electrode Yi), and a third electrode (i.e., address electrode Ai) that intersects the electrode pair to define a discharge cell (10) (Figs. 1, 3; Page 1, paragraphs [0005-[0007] & [0012]); and

a drive unit (i.e., control unit 110) that drives the panel unit using a drive method having a write period (i.e., address period A1-A8) and a sustain period (SS1-SS8), by applying, in the sustain period, a first voltage of predetermined duration (i.e., second sustain pulse) to the electrode pair (i.e., sustain and scan electrodes X, Yi), and a second voltage of predetermined duration (i.e., first sustain pulse) to the third electrode (i.e., address electrode Ai), so as to generate a sustain discharge between the first and second electrodes (i.e., sustain and scan electrodes X, Yi) in the sustain period, wherein in the sustain period the drive unit performs a control in which a potential of the third electrode (i.e., address electrode Ai) is changed during the sustain discharge, so as to hasten the generation or to shift a region in which or to shift or lengthen a discharge path of the sustain discharge in comparison to when the potential is not changed (Figs. 3, 4, 7; abstract; Page 1, paragraphs [0007], [0008], [0011], [0012]; Page 2, paragraphs [0029] – [0030]).

Although, Chien shows the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) changing, Chien does not show the potential of the

second voltage applied to the third electrode (i.e., address electrode Ai) changing within the duration of the first voltage applied to the first electrode.

In the same field of endeavor, Yamamoto teaches of changing a potential of the second voltage applied to the third electrode (i.e., address electrode) within the duration of the first voltage applied to the first electrode (i.e., X or Y electrode) during a sustain discharge (i.e., light-emission period 51) for the purpose of increasing the luminous efficiency of the plasma display panel (Figs. 1, 3, 14; Col. 10, line 23- Col. 11, line 16; Col. 16, lines 18-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the drive unit (i.e., control unit 110) of Chien to change the potential of the second voltage applied to the third electrode (i.e., address electrode Ai) within the duration of the first voltage applied to the first electrode as thought by Yamamoto for the purpose of increasing the luminous efficiency of the plasma display panel as taught by Yamamoto.

Claims 43-48, 49-64, 65-69, 76, 77, 78 and 79 are rejected for the same reason given above for the plasma display panel device as discussed in claims 1-6, 8-12, 7, 14-24, 25-32, 39, 40, 41 and 42.

Allowable Subject Matter

4. Claims 33, 36-38, 70 and 73-75 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter: It is agreed that the prior art of record fail to teach or suggest, alone or in combination, the following combination of the limitations: "applying in a sustain period (step) a second voltage of a predetermined duration to the third electrode and a first

voltage of a predetermined duration to the first electrode and second electrode, so as to generate a sustain discharge between the first and second electrodes in the sustain period, detecting a brightness average of an image to be displayed by the panel unit and a temperature of the panel unit; and changing the second voltage of the third electrode according to the detected brightness average and temperature" in a manner recited in claims 33 and 70. It is for these reasons in combination with all the other limitations in the independent claims 33 and 70, that claims 33, 36-38, 70 and 73-75 are allowable over prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ephrem Alemu whose telephone number is (571) 272-1818. The examiner can normally be reached on M-F Flex hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EA
1-16-07

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PRIMARY EXAMINER